IHS Standards of Care for Patients with Type 2 Diabetes (August 2003)

The *IHS Standards of Care for Patients with Type 2 Diabetes* have been developed and updated by the IHS National Diabetes Program to help provide consistent, quality care to patients with diabetes.

1 Baseline Studies

Height
Measure once and record on PCC Health Summary. If PCC is not available, record on diabetes flow sheet. For children <18 years of age, height and weight should be recorded at each visit. Use to calculate body mass index and ideal or reasonable body weight.

Date of Diabetes Diagnosis
Record on PCC Health Summary. If PCC is not available, record on diabetes flow sheet. Longer duration of diabetes correlates with increased risk of complications.

ECG
Obtain baseline then repeat every 1-5 years as clinically indicated (for those age 40 and above, or with diabetes duration over 10 years, every 1-2 years is recommended).

PPD
Should be documented once after diagnosis of diabetes. (Offer INH prophylaxis to patients according to protocol - refer to Number 9).

2 Each Clinic Visit

At each clinic visit, the appropriate education, intervention, referral and/or follow-up will be provided as indicated.

Weight
Compare with measurements from prior visits to identify trends.

Blood Glucose
Results of lab determinations and self-monitoring should be available for timely discussion with the patient. Hemoglobin A1c (A1C) is the "gold standard" for assessing glucose control. This test should be conducted at 3-4 month intervals. Lowering A1C has been associated with a reduction in microvascular and neuropathic complications of diabetes.

- Fasting/post-prandial glucose measurement and self-monitoring records should be available for timely discussion with the patient at each visit. Self-monitoring BG records are vital to diabetes management decisions.
- Determine if A1C has been performed within the past 3-4 months and order if due.

- A1C estimates the average degree of glycemic control over the preceding three months.
- A1C is the standard way to measure glycemic control.
- A1C results should be discussed with the patient at the time of the patient visit. If in-house measurement is unavailable, blood sample should be obtained several days before the clinic visit.

Blood Pressure

Target BP is <130/80. Additional protection against complications, including renal failure and cardiovascular disease, may be obtained by lowering BP even further.

In persons older than 50 years, systolic blood pressure greater than 140 mm Hg is a much more important cardiovascular disease risk factor than diastolic blood pressure. Individuals with a systolic blood pressure of 120-139 mmHg or a diastolic blood pressure of 80-89 mmHg should be considered as prehypertensive and require health-promoting lifestyle modifications to prevent cardiovascular disease.

- Accurate blood pressure measurement in the office is stressed.
- BP numbers and goals should be provided to patients.
- Ambulatory Blood Pressure Monitoring is warranted for evaluation of "white-coat" hypertension in the absence of target organ injury. It may also be helpful in assessing patients with apparent drug resistance, hypotensive symptoms with antihypertensive medications, episodic hypertension and autonomic dysfunction.
- Major lifestyle modifications shown to lower BP include weight reduction in overweight or obese individuals, adoption of the Dietary Approached to Stop Hypertention (DASH) eating plan which is rich in potassium and calcium, dietary sodium restriction, physical activity and moderation of alcohol consumption.

Further recommendations and guidelines for the prevention, detection and treatment of high blood pressure may be found in the "The Seventh Report of the Joint Nation Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure," published in the May 21, 2003 issue of JAMS or visit the National Heart, Lung and Blood Institute (NHLBI) web site at www.nhlbi.nih.gov/guidelines/index.htm. Facts about the DASH eating plan are also available on this website. Published data on the benefits of the DASH eating plan may be found in the *New Journal of Medicine* article published in the January 4, 2001 issue: "Effects on blood pressure of reduced dietary sodium and the Dietary Approached to Stop Hypertension (DASH) diet."

In children and adolescents, hypertension is defined as BP that is, on repeated measurement, at the 95th percentile or greater adjusted for age, height, and gender. Lifestyle interventions are strongly recommended, with pharmacologic therapy instituted for higher levels of BP or if there is insufficient response to lifestyle modifications. ACE inhibitors and ARB's should not be used in pregnant or sexually active girls.

For BP tables and further information regarding hypertension in children and adolescents see the *NHLBI 1996 Update on the Task Force Report (1987)* on High Blood Pressure in Children and Adolescents: A Working Group Report from the National High Blood Pressure Education Program on the NHLBI website at www.nhlbi.nih.gov/health/prof/heart/hbp/bhp_ped.htm. To use the tables, the height percentile is determined from standard growth charts. The child's measured systolic and diastolic BP is compared with the numbers provided in the table (page 14 for boys, page 15 for girls) for age and height percentile.

▶ Foot Inspection

Inspection of feet and nails. Check for ingrown toenails, calluses, deformities, pressure points, ulcer and cellulitis. A more comprehensive foot exam should be done at least annually (see page 55).

3 Annual

▶ Serum Creatinine

The serum creatinine is used to screen for renal insufficiency. Obtain a serum creatinine yearly and then use a formula to estimate Glomerular Filtration Rate (GFR). GFR should be used to stage chronic kidney disease. Estimated GFR, 60 ml/min/1.73m^2 should be prompt evaluation for anemia (Hgb). Metabolic gene disease (Ca, Phosphorus, alkaline phosphatase, PTH), and malnutrition (albumin).

▶ Complete UA/Microalbuminuria

A test for urine protein should be performed yearly. If negative, a screening test for microalbuminuria should be performed (by A/C ratio or dipstick test). Dipstick positive microalbuminuria should be confirmed on a separate specimen using an A/C ratio (abnormal microalbumin is 30-299 ug/mg; overt proteinuria is ≥ 300 mcg/mg) or 24-hour urine.

ACE inhibitors and angiotensin receptor blockers (ARBs) are recommended for inpatients with microalbuminuria or proteinuria, even if normotensive, unless contraindicated.

▶ Lipid Profile

Risk factors for atherosclerosis include LDL >100 mg/dl, HDL <40 mg/dl in men and <45 mg/dl in women and TG>150 mg/dl. Even lower LDL and TG values represent increased risk in persons with previously documented atherosclerosis. These risk factors, especially elevated LDL should be treated aggressively. Caution should be used when considering agents that aggravate hyperglycemia.

A lipid panel should be performed annually (TC, LDL, HDL, TG). Consider direct LDL measurement, especially if TG >400 mg/dl or if the specimen is to be obtained non-fasting. Elevated TC, LDL, TG and low HDL confer greater risk for atherosclerosis. Optimal LDL cholesterol levels for adults with diabetes are <100 mg/dl.

All patients with LDL>100 mg/dl require Medical Nutrition Therapy and other lifestyle modifications. Pharmacologic intervention is recommended if dietary interventions and lifestyle modifications are ineffective in lowering LDL to <100 mg/dl or immediately if LDL >160 mg/dl. The Heart Protection Study indicates that people with diabetes may benefit significantly from statin therapy even if their LDL is below 100 mg/dl. Read more about the Heart Protection Study in the July 6, 2002 issue of *Lancet*, available on the website www.thelancet.com.

Information regarding the management of dyslipidemia in children and adolescents with diabetes may be found in the new American Diabetes Association Consensus Statement: "Management of Dyslipidemia in Children and Adolescents with Diabetes," published in the July 2003 issue of *Diabetes Care*. It reviews how frequently lipid levels should be monitored, how abnormal levels should be treated, and what additional research is needed. Or visit the ADA website at www.americandiabetesassn.org.

Eye Exam
Retinal exam through dilated pupils or stereo fundus photo. People with type 2 diabetes should receive an exam at diagnosis and yearly thereafter.

Dental Exam
Annual screen for periodontal disease and other oral pathology.

Complete Foot Exam
Risk assessment to include pulse check and sensory evaluation with monofilament, identification of foot deformity and documentation of history of foot ulcers. More frequent follow-up foot care may be required based on clinical findings.

Screen for Neuropathy
By history and physical; include sensory, motor and autonomic evaluation.

4 Immunizations and Skin Tests

Flu Vaccine
Yearly in diabetes at all ages. Influenza vaccine can reduce diabetes-related hospitalizations by up to 79% during influenza epidemics.

Pneumovax
Immunize everyone at the time of diagnosis. Reimmunization should be strongly considered five years after the first dose for those patients at highest risk of fatal pneumococcal infection (e.g., asplenic patients) or those at highest risk of rapid decline in antibody levels (e.g., those with chronic renal failure, nephrotic syndrome, or transplanted organs). Reimmunize all patients ≥ age 65 years if it has been > 5 years since initial vaccination.

TD
Every 10 years.

Hepatitis B
Immunize persons whose renal disease is likely to lead to dialysis or transplantation (estimated GFR <60 ml/min/1.73m²).

PPD
Once after diagnosis unless known positive. PPD-positive people with diabetes, including AI/AN with type 2 diabetes, have five times the risk of reactivating TB. All diabetic patients with positive PPD including those over 35 should be given INH chemoprophylaxis according to current guidelines (see Number 9).

5 Special Aspects of Diabetes Care

Antiplatelet Therapy
Aspirin has been used as a primary and secondary prevention strategy to prevent cardiovascular events. Men and women with diabetes have a 2-4 fold increase in risk of dying from complications of cardiovascular disease (CVD). Aspirin in doses of 162-325 mg/day is recommended for adult patients with diabetes. Aspirin should not be used in patients under 21 years of age because of the risk of Reye's Syndrome.

Strongly consider aspirin therapy (or other antiplatelet therapy) as a primary prevention strategy in high risk men and women age 30 and above with diabetes. This includes individuals with family history of CVD, cigarette smoking, hypertension, obesity, albuminuria and dyslipidemia.

Use aspirin therapy (or other antiplatelet therapy) as a secondary prevention strategy in diabetic men and women who have evidence of large vessel disease, such as a history of MI, stroke, peripheral vascular disease, claudication or angina.

Clopidogrel (Plavis) is another antiplatelet therapy known to reduce CVD in people with diabetes. Consider using this medication as an alternative to aspirin therapy if patient has significant GI intolerance or true aspirin allergy. Studies show similar if not better efficacy when compared to aspirin. Ticlopidine is another option but has been shown to have less efficacy than aspirin and requires more intensive monitoring.

Tobacco Use
Current tobacco use should be documented and a referral made to a program for counseling for cessation of tobacco use.

Distinguishing Type 1 from Type 2 Diabetes
Distinguishing adult-onset latent type 1 diabetes from type 2 diabetes is not always straightforward. Several laboratory studies may be helpful when the

diagnosis is not clear clinically: c-peptide, the other half of pro-insulin, can evaluate a patient's endogenous insulin secretion and measuring autoantibodies, GADA and ICA (antibodies to glutamic acid decarboxylase and islet cells) can detect an underlying autoimmune process. These tests can be useful in at least three clinical situations:

1. Solving a clinical problem about using oral agents vs. insulin
2. Evaluating a patient with history of ketoacidosis when stable (useful in setting of ETOH acidosis and diabetes to determine ongoing need for insulin)
3. Evaluating a patient who is non-ketonic off of insulin, but has few or none of the components of the metabolic syndrome

6 Self-Care Education

Use of the PCC education codes to document education is encouraged.

Nutrition Education

Meal planning, nutrition education and exercise are the primary treatment strategies for type 2 diabetes. The Indian Health Service National Diabetes Program supports the American Diabetes Association position that all persons with diabetes receive regular nutrition counseling and are seen by an RD/nutritionist every six months to one year. Some people may require more frequent evaluation and counseling.

Diabetes Education

All patients with diabetes and their families should have diabetes self-care information. The *National Standards for Diabetes Care and Patient Education* provide guidelines for education program development with criteria specific for AI/AN health care facilities. Every facility should work towards providing systematic mechanisms to make culturally relevant self-care information available for patients.

Exercise Education

Exercise is associated with improvement in both short- and long-term metabolic control. Exercise counseling should be provided to all persons with diabetes. The appropriate type of activity, including frequency, duration and intensity, should be individualized for each patient.

Education and Glycemic Control

- Self monitoring results should be discussed with the patient at each visit.
- A1C results should be discussed with the patient within two weeks of the test, preferably at the patient visit.

Self Blood Glucose Monitoring (SBGM)

The purpose of SBGM is to determine the pattern of blood glucose throughout the day. This pattern provides information for selection and adjustments in therapy.

Frequency of monitoring must be individualized and may vary as day-to-day circumstances require.

7 Routine Health Maintenance

Physical Exam
Complete exam as baseline, then routine.

Pap Smear/Pelvic Exam
Yearly. Further recommendations and guidelines for cervical cancer screening may be found on the following websites: www.ahrq.gov/clinic/3rduspstf cervcanwh.htm and www.ncbi.nlm.nih.gov/entrez/query/fcgi?cmd=Retrieve&db=PubMed&list_uids=12469763$dopt=Abstract.

The American College of Obstetricians and Gynecologists released their own Practice Bulletin in 2003.

Breast Exam
Yearly.

Mammogram
Every 1-2 years in women ages 40-49, yearly thereafter.

Rectal Exam and PSA
May be offered for prostate evaluation in men ≥ 50 years of age.

Colorectal Cancer Screening
Potential screening options are numerous. However, within the Indian Health Service setting, access to care and cost constraints may limit provider options. As a result, the Indian Health Service recommends the following:

1. Renewed emphasis on CRC screening
2. Improved patient education about CRC screening
3. Fecal occult blood testing (three samples gathered at home) every year if possible; every two years at a minimum
4. Appropriate follow-up for positive FOBT results
5. Additional screening options if available
   a. Flexible sigmoidoscopy within the last five years
   b. Annual FOBT plus flexible sigmoidoscopy every five years
   c. Double contrast enema every five years
   d. Colonoscopy within the last 10 years

If the patient is at risk for earlier onset CRC (e.g., first degree relative with onset of CRC before age 50), screening should begin earlier and more frequently.

8 Pregnancy and Diabetes

All women who are in their childbearing years should receive pre-pregnancy counseling for optimizing metabolic control prior to conception. Counseling for family planning is essential to achieve this goal.

American Indian and Alaska Native women are at increased risk for developing gestational diabetes (GDM), as are women with certain other risk factors, including, but not limited to, the following:

- Previous gestational diabetes
- Previous fetal macrosomia
- Unexplained stillbirth
- Congenital anomaly
- Obesity
- Insulin resistance syndrome
- Polycystic ovarian syndrome (PCOS)
- Family history of diabetes

American Indian and Alaska Native women should be screened for pre-existing diabetes early in pregnancy. If early screening is negative, a screen for GDM should be repeated at 24-28 weeks gestation.

Women with GDM are at increased risk of developing type 2 diabetes after delivery (about one third of all AI/AN women with GDM will develop diabetes within five years). These women should be re-tested by OGTT at least 6-12 weeks post delivery to determine their glycemic status. Women with a normal postpartum OGTT should be re-tested every 1-3 years. Bear in mind that diagnostic standards for diabetes in breastfeeding women have not been established. Blood glucose should be monitored in the postpartum and lactating period, including regular self blood glucose testing, as clinically appropriate.

All women with a history of GDM should receive counseling/education regarding lifestyle modifications that will reduce or delay the development of type 2 diabetes. Moreover, the importance of maintaining optimal glucose control prior to and during any subsequent pregnancy should be stressed. Mothers should be made aware that children of GDM pregnancies should be monitored for obesity and abnormalities of glucose utilization.

Further recommendations and guidelines for the screening, diagnosis and treatment of GDM may be found in the most recent *Clinical Practice Recommendations* of the American Diabetes Association (published annually) and Metzger BE, Coustan DR (Eds.): Proceedings of the Fourth International Workshop-Conference on Gestational Diabetes Mellitus. Diabetes Care 21 (Suppl. 2): B1-B167, 1998.

9 Tuberculosis and Diabetes Patients*

A positive PPD skin test (i.e., ≥ 10 mm induration 48-72 hours after administration) means that a person either has latent tuberculosis infection (LTBI) or active tuberculosis (TB) disease. Active TB disease needs to be ruled out prior to starting patients with LTBI on treatment. Treatment for active TB and LTBI are different.*

Patients with diabetes and LTBI are at high risk of progressing to active TB, if they are not treated for LTBI. Studies have shown that the risk is 2-6 times greater in patients without diabetes. Other factors that further increase the risk for TB include: recent PPD conversion within two years, intravenous drug use, chest film showing prior active disease that was never treated, immunosuppressive drugs and ESRD. Cutaneous anergy increases as patients age and develop complications of diabetes such as ESRD. Anergy may lead to false negative PPD test results.

In most cases, progression of LTBI to active TB can be prevented by treatment with INH. In general, patients with diabetes who have a positive PPD (accurately read by a provider trained in interpretation of PPD) should receive treatment for LTBI, except in the following circumstances:

- Severe liver damage
- Suicidal ideation
- Adverse reaction to INH

Patients receiving treatment for LTBI should be followed and monitored for potential hepatoxicity. While national recommendations emphasize monitoring hepatoxicity through systematic repetitive patient education and clinical evaluation for signs and symptoms of hepatoxicity, baseline measurement of liver function tests after one month should be considered, especially in patients receiving other potentially hepatoxicity medications. Some experts recommend that INH be discontinued if transaminase levels exceed three times the upper limit of normal when associated with symptoms or five times the upper limit of normal if the patient is asymptomatic.

*Recommendations for targeted tuberculin testing and treatment of LTBI in MMWR, June 9, 2000/49(RR06); 1-54 or at: www.cdc.gov/mmwr/indr_2000.html. Treatment for active TB disease is detailed in: *CDC Core Curriculum in TB: What the Clinician Should Know*, CDC, 2000 (4th Edition).

IHS TB Protocol for Patients with Diabetes:

- Check the PPD status of all patients with diabetes.

- If the PPD status is negative or unknown:
  - PPD testing should be done within one year of initial work up for diabetes diagnoses and treatment if they have LTBI.
  - If no PPD has been placed since the diagnosis of diabetes and the patient's PPD status is negative or unknown, a PPD status needs to be ascertained.
  - Subsequent PPD testing is done only if there is contact with an active TB case.

- If the PPD status is positive:
  - Check for completion of past treatment for active TB or LTBI (6-9 months of INH for LTBI or multiple drug therapy for active disease).
  - If the patient has not been adequately treated, search for active disease by history (weight loss, etc.), fever (record temperature) and recent chest x-ray (within six months). If there is no evidence of active disease, recommend treatment for LTBI (nine months of INH 300 mg daily) to all patients with diabetes, regardless of age, unless the patient has liver disease, suicide ideation or a previous adverse reaction to INH. Patients with diabetes should be given pyridoxine (10-15 mg/day) with their INH. Consider directly observed therapy of LTBI when possible, especially for patients on dialysis.